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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,815	09/25/2000	Norio Chiba	S004-4054(PC)	3682

7590
Adams & Wilks
50 Broadway
31st Floor
New York, NY 10004

07/28/2004

EXAMINER

VUONG, BACH Q

ART UNIT	PAPER NUMBER
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2653

DATE MAILED: 07/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/601,815

Applicant(s)

CHIBA ET AL.

Examiner

Bach Q Vuong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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This communication is responsive to an amendment filed on 04/28/04

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 7-9, 11-18 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Duerig et al. (US 5,793,743).

Duerig et al., according to Figs. 1-5, shows an information recording apparatus comprising all features of the claimed invention.

Regarding claim 1, see Figs. 1-5 which show an information recording apparatus comprising: a probe (see laser diode 3) for producing or scattering near field light for reading or recording information; probe access means (see piezoelectric actuator means and tip 2) for causing a tip of the probe to access a desired region of a recording medium wherein the information is to be read or recorded; probe scanning means (see piezoelectric actuator means) for scanning the tip of the probe across a surface of the recording medium; and heating radiating means (see tips 2, 22, 32 or 42) for radiating heat through the tip of the probe; wherein the surface of the recording medium (see storage medium 1, 11, 21, 31 or 41) is provided with a thin film that varies in physical properties in response to heating of the surface by the tip of the probe in the vicinity of the produced or scattered near field

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light to heat the desired region of the recording medium to record information on the recording medium.

Regarding claim 2, see Figs. 1-5 which show an information recording apparatus wherein the heat radiating means (see tips 2, 22, 32 or 42) comprises an electric heating element (see voltage source 38 and the I/V-converter 37) provided on the probe for heating the tip of the probe.

Regarding claim 3, see Figs. 5A and 5B which show an information recording apparatus wherein the heat radiating means comprises a laser light source (see laser beam in Figs. 5A-5B) for projecting laser light through the tip of the probe.

Regarding claims 4 and 5, see Figs. 5A-5B which show an information recording apparatus wherein the probe (see probe 52) has a microscopic aperture at the tip thereof, and the laser light source (see laser beam) introduces light through the microscopic aperture, and the tip of the probe has a metal film formed on a surface thereof except for microscopic aperture.

Regarding claim 7, see Figs. 1-5 which shows an information recording means comprising: a probe (see probe 2, 22, 32, 42 or 52) having a sharpened tip; probe access means (see piezoelectric actuator means and tip 2) for causing the tip of the probe to access a desired region of a recording medium; probe scanning means (see piezoelectric actuator means) for scanning the tip of the probe across a first surface of the recording medium; and an illumination light source (see laser beam 23) for illuminating a second surface of the recording medium opposite the first surface so that a near field light is produced above the first surface of the recording medium; wherein the first surface of the recording medium

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(see medium 21, 211-213) is provided with a thin that varies in physical properties in response to hearing of the surface.

Regarding claim 8, see Fig. 2 which shows an information recording apparatus wherein the illumination light source (see laser 23) further illuminates the light surface of the recording medium to produce a near field light above the first surface of recording medium.

Regarding claim 9, see Figs. 1-5 which show a method of recording information comprising: a probe access process of causing a tip of a probe to access a recording medium to produce or scatter near field light for reading or recording information (see piezoelectric actuator means and tip 2); a probe scanning process of scanning the tip of the probe to a desired position on the recording medium (see actuator means); and a heat recording process of radiating heat energy (see tips 2, 22, 32 or 42) through the tip of the probe to locally heat the recording medium proximate near field light to record information at the desired position on the recording medium.

Regarding claim 11, see Figs. 1-5 which show a method of recording information including: an illumination process of illuminating a desired position on surface of recording medium to produce near field light above the surface of the recording medium at the desired position (see laser beam 23); a probe access process of causing a sharpened tip of a probe to access the desired position of the recording medium to record information on the recording medium by locally intensified energy caused by insertion of the tip of the probe in the near field at the desired position (see tip 2, 22, 32, 42 or 52); and a probe scanning process of scanning the tip of the probe across the surface of the recording medium to the desired position on the recording medium to record the information (see actuator means).

Regarding claim 12, see Figs. 1-5 which show a method of recording information wherein the illumination process comprises a process of illuminating a surface of the recording medium opposite a surface to which the sharpened tip of the probe (see tip 2) is accessed so as to produce near field light on the surface of the recording medium accessed by the sharpened tip (see the respective disclosure of Fig. 2 for details).

Regarding claim 13, see Figs. 1-5 which show an information recording apparatus wherein the probe comprises a cantilever probe (see tip 52); and heating radiating means comprises a laser light source (see laser beam in Figs. 5A and 5B) for projecting a laser light through the cantilever probe so as to radiate the recording medium through the tip of the probe.

Regarding claim 14, see Fig. 1-5 which show an information recording wherein the probe (see tip 52) has a microscopic aperture at the tip, a diameter of the aperture is inherently smaller than a wavelength of the laser light.

Regarding claim 15, see Figs. 1-4 which show an information recording apparatus wherein the probe comprises a cantilever probe (see tip 42); and the heat radiating means (see Fig. 4) comprises a heating element attached to the probe for heating the tip of the probe.

Regarding claim 16, see Figs. 3-5 which show an information recording apparatus wherein the probe (see tip 32, 42 or 52) comprises an optical waveguide probe having waveguide portion and a sharpened tip portion; and the heat radiating means (see laser beam in Figs. 5A-5B) comprises a laser light source for projecting a laser light through the optical waveguide portion so that the light is projected onto the desired region of the recording medium through the sharpened tip portion.

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Regarding claims 17 and 18, see the rejection applied to claim 14.

Regarding claim 28, see Figs. 1-21 which show a method of using a scanning probe instrument to record information on a recording medium, comprising the steps of: providing a recording medium (see medium 11, 21, 31, 41 or 51) having a coating that change in physical characteristics in response to an applied energy; generating near field light in the vicinity of a desired region of the recording medium at which information is to be recorded (tip 32, 42 or 52); and causing a tip of a probe of the scanning probe instrument to come into close proximity with the recording medium at the desired region to generate sufficient energy in the desired region to record information onto the recording medium (see actuator means).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 10 and 19-27 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duerig et al. (US 5,793,743) in view of Kado et al. (US 6,101,164).

Muramatsu et al., according to Figs. 1-21, shows all the features of the instant claimed invention (see the rejection above) except for the use of an optical fiber probe. Yee et al., according to Fig. 1 and 2, teaches the use of the surface of the recording medium being formed of a material having a physical property that varies in response to the application of thermal energy thereto as particularly recited in each of claims 19 or 20, and heat generating means for sufficiently heating to change the physical property of a desired

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region of the recording medium as recited in each of claims 6, 10 or 27. Kado et al., according to Figs. 1-5, teaches the use of recording medium having at least one material selected from the group consisting of a phase change material, a shape changing material and a magnetic material (see recording medium 3), and auxiliary heating for heating a desired region of the surface of the recording medium to change the physical property of the coating material (see referral numbers 4, 6-9 in Figs. 1 or 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to put the use of material of recording medium and the heat generating means as taught by Kado et al. into the information recording apparatus of Muramatsu et al in order to provide alternative embodiments of recording/scanning information on optical disc.

Regarding claims 21 and 22, see the rejection above which show an information recording apparatus wherein the heat generating means (see the rejection above) heats the desired region of the recording medium to a temperature insufficient to change the physical property of the coating material, and insertion of the probe tip in the vicinity of the heated region of the surface locally intensifies thermal energy applied by the heat generating means to heat the coating material in the desired region to a temperature sufficient to change the physical property.

Regarding claim 23, see the rejection above and Fig. 21 which show an information recording apparatus wherein the heat generating means the heating generating means (see Fig. 21 for details) comprises a laser light source for producing a laser light for radiating and thereby heating the desired region of the recording medium.

Regarding claim 24, see the rejection above and Figs. 1-21 which show an information recording apparatus wherein the laser light (see laser 34 in Fig. 17) is irradiated

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on a surface of the recording medium opposite the surface to which the probe tip is brought into close so that the near field light is produced on the surface to which the probe tip (see probe 4 in Fig. 17) is brought into close proximity, and insertion of the probe tip in a region of the near field light produces locally intensified energy for heating the recording medium to change the physical property thereof.

Regarding claims 25 and 26, see the rejection applied to claims 4 and 5.

Regarding claim 29, see the rejection above which show an information apparatus wherein the recording medium comprises an optical phase shift recording medium, and combined heat produced by the heat radiating means and the near field light is sufficient to cause the recording medium to reach a phase shift temperature thereof.

Regarding claim 30, see the rejection above and Figs. 16-21 which show an information apparatus wherein the heat radiating means heats the desired region of the recording medium to temperature insufficient to change the physical properties of the recording medium, and insertion of the probe tip in the vicinity of the heated region of the recording medium locally intensifies thermal energy applied by the heat radiating means to heat the recording medium in the desired region to a temperature sufficient to change the physical properties.

Regarding claim 31, see the rejection above and Figs. 1-21 which show an information apparatus wherein the recording medium comprises an optical phase shift recording medium, and a combined heat produced by the illumination light source is sufficient to cause the recording medium to reach a phase shift temperature thereof when the probe is in close proximate to the desired region of the recording medium.

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Response To Arguments

Applicant's arguments with respect to claimed invention have been considered but are moot in view of the new ground(s) of rejection.

Cited References

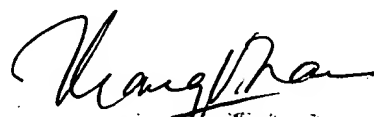
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited references relate to an information recording apparatus and method for recording/reproducing information recorded on recording medium using a conductive probe.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bach Q Vuong whose telephone number is (703) 305-7355. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (703) 305-6137. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BV
July 25, 2004


THANG W. TRAN
PRIMARY EXAMINER